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The Hazards of Tuberculosis in the General Hospital

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IN recent years, public health authorities and others concerned with the control and treatment of tuberculosis have directed considerable attention to the problem of tuberculosis in general hospitals and to the importance of case-finding in the patient population of these institutions. Although gratifying progress has been made in some parts of Canada, the action taken to date by many hospital boards and administrators has been far from satisfactory. It is not our intention in this paper to present any new principles or methods for meeting this health hazard, but merely to review the situation and emphasize its importance, using illustrations derived from our experience in Halifax.

Pulmonary tuberculosis is a communicable disease and, as such, it can create a public health problem in general hospitals. It is still a disease of relatively high prevalence in Canada in spite of excellent progress in its control. It is not easily discovered by routine physical examination. These facts are well known to practitioners of public health. But, because the incubation period is a long one and the evidence of person-to-person spread is not so dramatically obvious as in many other communicable diseases, there is a regrettable tendency on the part of many medical, nursing and lay members of hospital staffs to forget, or at least disregard, the infectious nature of this disease. Furthermore, not all hospital authorities or medical staff members have yet been fully educated as to the difficulty of diagnosing tuberculosis, at least not to the point of taking effective action.

It should hardly be necessary to state that physical examination of the chest alone is of relatively little value in appraising the true incidence of

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pulmonary tuberculosis in hospital patients or any other group. It is only by the intelligent evaluation of the x-ray plate with the aid of the clinical examination and other corollary evidence that an estimate can be obtained which will be close to the true incidence. Fifteen years ago a physician would decide from symptoms and physical signs whether there was suspicion enough to warrant an x-ray of the chest, and the x-ray was the court of appeal. The trend today is to use the x-ray as an accurate instrument to detect the presence of pathological changes in the chest and then to have the clinician evaluate their significance. Such evaluation includes history, physical examination, tuberculin status, examination of sputum, other laboratory aids and often, with early diagnosis, a period of observation.

Considerable progress can still be made in our hospitals to raise the doctor's level of suspicion concerning the possibility of hidden tuberculosis, or, preferably, to educate him in the desirability of having routine chest x-rays taken on all of his patients, or at least on those admitted to hospital. In Halifax, the provision of a free service for 4 x 5 inch x-ray plates on any patient seen by a practising physician has greatly aided in this direction. Many clinicians are making extensive use of this service for their patients.

Once tuberculosis is diagnosed in a hospital patient, effective action can be taken to reduce the hazard to a minimum. It is no longer suggested that the problem be side-stepped by exclusion of tuberculosis from the general hospital, but rather by early discovery of the hidden case and prompt effective action within the hospital by a staff that has had adequate teaching in the handling of all communicable diseases, including tuberculosis. It is noteworthy that the Report on Hospital Care in the United States, prepared by the Commonwealth Foundation in 1947, recommended that the modern general hospital should provide for the treatment of tuberculosis and other communicable diseases, that special hospitals should not be provided for such conditions and that those now in operation should expand their programs to include other than infectious diseases. At present most tuberculosis patients are treated in special hospitals, but it is a poor general hospital that does not have the facilities and staff capable of providing safe and effective care for such a patient until transfer to a sanatorium can be arranged.

In the planning of an adequate tuberculosis control program for a general hospital, the institution must be regarded as a community. It is made up of the sick, those attending the sick and those required for maintenance of the hospital plant. The total population of the hospital is, with few exceptions although in varying degree, exposed to the hazard of communicable disease. All too frequently only a partial program of tuberculosis control is in effect—for the nurses in training but not the graduate nurses or the internes and doctors; for patients but not for the ward aides or the laundry staff. A complete program requires attention to the whole hospital community. Routine x-ray surveys in industry reveal an appreciable incidence of tuberculosis, and hospital staff members should be investigated in the same way at periodic intervals. There is always the possibility of the medical, nursing or maintenance personnel having undiscovered disease. In addition, patients with known tuberculosis may be admitted to the general hospital—

and they should be, if they develop other conditions that can best be treated at such an institution. However, a greater hazard lies in the hidden case. The patient admitted for treatment of non-tuberculous disease may have tuberculosis as well, unknown to himself or his physician. Several avenues of communication are therefore possible: patient to staff member or vice versa, patient to patient, or staff member to staff member. Emphasis on the occupational hazard to the nurse and other attendants, who may be infected from a known or hidden case of tuberculosis, should not allow us to disregard the other routes of spread.

What is the extent of the tuberculosis problem among patients admitted to general hospitals? Reported figures vary widely in different areas, but usually the rates have been considerably higher in the hospital patients than in groups of the general population examined in mass surveys of the same areas. In the Province of Nova Scotia during the past three years x-ray surveys have been made of admissions to seven general hospitals for periods of six months or more. Of 4,099 patients admitted, 239 or 5.8 per cent showed evidence of pulmonary tuberculosis, active or inactive, and 130 others or 3.1 per cent were considered tuberculosis suspects on the initial x-ray. A total of 369 or 8.9 per cent of adult patients therefore required further study for diagnosis and classification. Data from several of the hospitals were not classified in such a way that we can calculate what percentage of these 369 persons were eventually proven to have active tuberculosis requiring treatment, but in one hospital this was 1.2 per cent of 1,895 admissions. In other surveys of adult population groups in Nova Scotia with the mobile photofluorographic unit the proportion of active, inactive and suspect tuberculosis was approximately 2 or 2.5 per cent, or one-quarter of that observed in hospital patients. At present, only four hospitals in this province are taking routine films on all admissions, although several others have films on most of the patients.

In Ontario provision has recently been made for a province-wide program for x-raying patients admitted to hospitals, and to date approximately 1.47 per cent of 14,000 patients have had pulmonary tuberculosis, of which 0.22 per cent were active. The higher rates among patients admitted to Nova Scotia hospitals indicate our need for a similar plan.

The above data referred to the adult patients only. Among these, the persons over the age of 50 years must not be exempt from suspicion of tuberculosis and must not be protected by the cloak of age. Tuberculosis respects no age group, least of all those over 50. Of the 309 tuberculosis deaths occurring in Nova Scotia in 1947, 84 or 27 per cent were persons over the age of 50. Nor can the children be entirely disregarded; for in this group as well unsuspected tuberculosis does occur. The use of the tuberculin test is a sound routine procedure, positive reactors to be x-rayed or fluoroscoped. Although the risk of infection within the hospital is small from this source, the tests are valuable from the standpoint of epidemiology, since the family of the positive reactors can then be surveyed by x-ray. The value of this procedure has been indicated by our experience in the Halifax Children's Hospital where all admissions are routinely tuberculin-tested and appropriate action

taken by the City Department of Health to follow up the families of positive reactors. Several adult sources of infection in the community have thus been uncovered.

As a case-finding procedure, the routine x-ray of adult hospital admissions has proven its value. It aids in the protection of the hospital staff, the other patients and finally the household contacts to whom the patients would return. In addition, the earlier diagnosis is often a great boon to the patient since it reduces the duration of treatment, its cost and possibly its eventual outcome. But the full benefit from this program requires an effective plan to ensure full investigation, clinical, laboratory and radiological, of all persons who had suspicious admission x-rays while they are still in the institution, and notification to the public health authorities and family physicians to make certain that treatment and control measures will be instituted. Close co-operation of hospital and health department is essential to a fully effective plan. Routine admission x-rays may be of no value except to provide interesting statistics unless they result in effective investigation, treatment and control. Unfortunately the "follow-through" is not always all that it should be.

But again it should be repeated, one must not place all of the emphasis on the hazard of the hidden case of tuberculosis in the general hospital. Not all of the tuberculosis discovered by these routine admission films would have been missed during the period of hospitalization. The disease may be discovered in the process of differential diagnosis and immediate transfer to a tuberculosis hospital may not be possible. Known cases of tuberculosis may also require general hospital care for a concomitant ailment. And, finally, non-pulmonary tuberculosis is usually accepted as a responsibility of the general hospital. The extent of this problem is not generally recognized. Some indication of its magnitude may be gathered from the fact that in 1948, of the 51 deaths from all forms of tuberculosis in Halifax, 21 or 40.6 per cent occurred in the general hospitals. A sound technique for the safe care of these cases must be worked out, and all nurses in a general hospital should have had training in tuberculosis, communicable diseases or both. Mere discovery of the hidden case or knowledge of a definite diagnosis does not lessen the risk. The nurses and other attendants must know how to deal with the cases properly. It is encouraging to note that affiliations have now been arranged to train the nurses of several Halifax Schools of Nursing in the Hospitals for Tuberculosis and Communicable Diseases, but the majority of nurses in this province are not receiving such training, and there is still considerable inertia and active opposition to be overcome before such training will be adequate.

Another indication of the extent of the tuberculosis problem in the general hospital and of our inadequate program for dealing with it can be observed in the incidence of the disease in nurses and medical students. This has been emphasized many times in the past, but it is believed that many nursing school supervisors and hospital administrators would be shocked if they made a careful analysis of their statistics. We have reviewed the records of four Halifax nursing schools and the Dalhousie Medical School

for the period 1937 to 1947 and have compared the incidence of tuberculosis with that occurring in female students at Dalhousie University. Most of these latter students were in the Arts and Science Faculty. The Students' Health Service conducted an annual physical examination, and fluoroscopy of the chest was performed by a specialist in tuberculosis or internal medicine on all of these students. An x-ray was also obtained in doubtful cases. The study included only female university students of the same age groups as are admitted to nursing training and only those who came from Nova Scotia, in order that a valid comparison could be made.

Table I shows the incidence of tuberculosis in the three groups.

TABLE I

INCIDENCE OF TUBERCULOSIS IN STUDENTS OF NURSING (1), MEDICINE (2) AND ARTS AND SCIENCE (3), 1937-1947

Student Group	No. Admitted to Training	Proven Tuberculosis			Suspect Tuber-culosis	Person-Months in Training	Average Annual Tb. Attack Rate per 1,000 per annum
		Reactiva-ation	New	Total			
Nurses, Hospital A	482	6	27	33	13	11,228	35.3
" " B	333	0	11	11	4	8,099	16.3
" " C	111	0	2	2	0	2,077	11.5
" " D	57	0	1	1	0	509	23.5
Total, Student Nurses	983	6	41	47	17	21,913	25.7
Arts and Science (Female)	442	1	0	1	0	7,770	1.5
Medical	491	2	8	10	1	17,954	6.7

(1) In four Halifax Schools of Nursing.
(2) In Dalhousie University.

Proven tuberculosis included a small number who had shown evidence of apparently healed pulmonary lesions on admission to training, but who suffered a reactivation of the disease. Suspect tuberculosis included several with pleurisy or other lesions that were never specifically diagnosed as tuberculosis.

The nurses-in-training were obviously subjected to a far greater risk of tuberculosis than young women of the same age group and the same educational status who came from similar areas of the province. The nurses were observed over a slightly longer average period, since the rate of withdrawal was greater among the University students, but this is taken into account in calculating the rate by the life-table technique. One of the writers recently referred to a report showing that the tuberculosis attack rate was ten times as high in nurses-in-training as it was in teachers-in-training. A specialist in tuberculosis criticized this statement as being exaggerated, stating that the conclusions must have been drawn from a study of non-comparable groups with respect to age and other factors. However, the groups were closely comparable, and probably indicated fairly accurately the much higher attack rate in nurses. In our study the observation on two reasonably comparable groups of young women showed the nurses to have a tuberculosis rate sixteen times as great as their fellow students in Arts and Science.

Table II shows the cumulative percentage of nurses and medical students who developed tuberculosis at the end of each year of training.

Disregarding the tuberculosis suspects, the figures show that the risk of developing tuberculosis expressed by the life-table rate was 7.8 per one hundred student nurses during their three years of training and 3.9 per hundred medical students during five years of training. In nurses, the greatest incidence occurred in the second year of training, one hospital having a rate of 6.3 per cent per annum. In medical students, the rates were low until the final clinical and interne years. It is also to be noted that none of the nurses and few of the internes had affiliation in a tuberculosis sanatorium

TABLE II

CUMULATIVE PERCENTAGE OF TUBERCULOSIS PER YEAR OF TRAINING IN NURSES AND MEDICAL STUDENTS

Student Group	Cumulative Per cent Developing Tuberculosis by end of				
	1st year	2nd	3rd	4th	5th
Nurses					
Hospital A	2.6	8.9	10.4	—	—
" B	1.2	3.6	5.4	—	—
" C	0	0	2.8	—	—
" D	0	4.2	—	—	—
Total Student Nurses	1.8	6.1	7.8	—	—
Medical Students	0.5	0.8	1.5	2.2	3.9

or ward during these years. These observations definitely indicate the importance of patient contact in the general hospital for both nurses and medical students. It is encouraging to note that there has been a downward trend in these tuberculosis rates in nurses and medical students over the ten-year period, and a sharp drop since 1947.

It is emphasized that these rates occurred in hospitals of recognized standing and their administrative authorities were not aware of an unusual tuberculosis problem. A self-survey in other institutions, which are quite complacent about their records, might be equally revealing.

The mere occurrence of hidden or known tuberculosis in the general hospital does not provide the full explanation of the increasing hazard to nurses and other attendants of the sick. There is strong evidence to show that the tuberculin status of the individual nurse is important. In general, a negative tuberculin reactor develops significant pulmonary tuberculosis more frequently than the positive reactor. Our studies of tuberculin reactions indicate that of the 518 student nurses tested since 1947, 40.9 per cent had positive reactions to the Vollmer patch tuberculin test or second strength purified protein derivative of tuberculin (0.005 mg.). This indicates that at least 60 per cent of the nurses are in the tuberculosis-susceptible class. If we had used a more specific and less potent tuberculin test than the second strength PPD, the number of negative reactors would be larger, at least 70 per cent. In some classes it has been as high as 80 per cent.

The falling death rate together with early diagnosis and increasing facilities for segregation of tuberculosis from the general population is resulting in an increasing number of young people reaching the age of occupational hazard as negative tuberculin reactors. Indeed, we have come to the conclusion that in this occupational group a report of a negative x-ray without knowledge of the tuberculin status creates a condition of false security for the individual and the hospital.

In March, 1947, we started B.C.G. vaccination in the student nurses in four Halifax hospitals and medical students of Dalhousie University. The time interval and numbers involved do not warrant any conclusion yet, but it is interesting to note that of the 294 vaccinated nurses observed for a period of 4,414 person-months, none have developed pulmonary tuberculosis. Of 17 tuberculin-negative nurses, who were not vaccinated, and who were observed for 135 person-months, one developed tuberculosis. Of 206 nurses with positive tuberculin reactions observed for 1,415 person-months, 2 have developed tuberculosis. Rates have not been struck because of the small numbers. In any event, comparisons with the figures for the preceding 10 years could be used only as an index of the effectiveness of the whole tuberculosis control program and not of B.C.G. vaccine alone.

To summarize, tuberculosis is a problem in the general hospital and will continue to be one for some years to come; indeed the problem may increase even if there is a decrease in the number of tuberculosis patients, because at the same time there will be an increase in the number of negative tuberculin reactors who will be reporting for work, training or treatment. There is no excuse for undiagnosed tuberculosis existing in a general hospital either in the patient body, the hospital personnel or the maintenance staff. To reduce this hazard, it is necessary to x-ray all admissions in the adult group, in-patient and out-patient, private and public, with adequate investigation of those patients showing pathological shadows before a diagnosis is established. Tuberculin testing of children patients and investigation of the positive reactors, together with their families, is of considerable value. Notification of the public health authorities of cases so discovered is an integral part of the tuberculosis control program. X-rays of all staff personnel on appointment and at intervals of six months are also required and in nurses every three months. The greatest danger of tuberculosis in the general hospital lies, not with the known case if properly controlled, but in the undiagnosed patient. However, the hazard from the known case is equally great unless personnel are adequately trained. An adequate training program should include experience in communicable disease technique for all hospital personnel caring for patients or likely to come in contact with contaminated articles. Affiliate training in tuberculosis sanatoria should be a requirement for all nurses. The tuberculin status of the staff is now of sufficient importance to warrant routine tuberculin testing. In the occupational hazard group, the negative tuberculin reactor should at least be re-tested at regular intervals. Many now recommend also the use of B.C.G. vaccine although its value has not yet been proven by statistical studies to the satisfaction of all authori-

ties. Finally, compensation should be provided for those who develop tuberculosis because of the occupational hazard of caring for the sick.

The modern general hospital, being a community centre, is one of the best places to organize a good tuberculosis control program and to educate the public. To date, the record of such hospitals has not been too good in this respect.

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Problems Encountered in a Rural School Lunch Program

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DURING the past four years our staff has experienced at first hand the many and diverse problems encountered in the organization of rural school lunch programs. In New Brunswick the *rural, supplementary* type of program is by far the most common. Of approximately 1,500 rural schools, upwards of 350, or about 23 per cent, participate. Translating this figure into human values, it has been estimated that, of the 11,000 pupils enrolled, almost 6,000, or over half, have supplementary foods at their noontime meal.

Although in the present discussion we are not concerned with urban conditions, it may be of interest to note that of New Brunswick's 75 urban schools, 10 or about 13 per cent report active lunch programs conducted by Home Economics teachers. About 500 pupils of the 3,000 enrolled in urban schools are taking advantage of the lunch supplements offered.

A third group of pupils, numbering about 500, are receiving lunch supplements at our thirteen rural regional high schools. When this number is added to the 500 in urban schools and the 6,000 in small rural schools, we find that some 7,000 children in New Brunswick have some type of lunch supplement.

Complete noon meals are offered in two urban schools. In addition to the programs mentioned, some projects exist whereby underprivileged children receive supplements of milk or cod liver oil. Therefore, our previously stated total of 7,000 school children receiving lunch supplements must be considered a conservative estimate. Furthermore, it serves to point out that programs do exist apart from those organized by our field staff. For these we do not have reliable statistics.

In certain of our larger rural and urban schools voluntary or paid workers assist in the preparation of noon lunches. This situation, however, is the exception rather than the rule. It should be emphasized that our present discussion will be concerned solely with problems relating to the *supplementary* type of program in the typical *rural* schools, where teacher and pupils carry on without the aid of outside workers or of Home Economics Departments. Three nutritionists have been available in New Brunswick to offer part-time assistance to the rural teachers.

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A—*What Are the Main Problems?*

I—*Immediate*

(1) Enlisting the complete co-operation of teachers, many of whom feel they are already struggling against the problems of overcrowded curricula.
(2) Overcoming the indifference of the community.
(3) Demonstrating the need to the school board.
(4) Convincing older pupils of the benefits.
(5) Promoting programs of longer duration.

II—*Fundamental*

(1) The lack of adequate teacher training in methods of health education.
(2) The inadequacy of certain health textbooks as attractive sources of reliable information.
(3) An inadequate supply of public health personnel for field work.

B—*How Are We Attempting to Solve These Problems?*

I—*Immediate Problems*

(1) *Enlisting the co-operation of teachers*

The initial attempt to arouse interest in school lunches is made each fall at the Regional Conferences of Teachers, held in each county during the week preceding school opening. In addition to an address and demonstration of lunch equipment and teaching aids there are usually one or more classes in nutrition teaching methods.

To strengthen this initial contact the nutritionist later attends several meetings of smaller groups of teachers within the region. These are held under the direction of the County Superintendent, and the nutritionist and district public health nurse are invited to attend. School lunch and nutrition teaching methods are again promoted and are integrated with the nurse's approach to other school health problems. Because these groups are smaller, it is possible to have free and informal discussion. The teachers indicate on prepared forms their desire to initiate a school lunch program and, at the same time, furnish information with regard to their school facilities.

The third step consists of visits to those schools whose teachers have requested assistance. It is not possible to visit every school in the county and it is not advisable to urge disinterested teachers to organize lunch programs. A lunch program which is imposed upon a school is not likely to last. During this initial school visit the program is again discussed with the teacher and with the pupils. Teaching aids such as posters, pamphlets, films and filmstrips help to arouse and maintain interest. A School Lunch Manual is discussed and left with the teacher. A thorough survey is made of facilities—water supply, adequate space, noontime supervision, adequate cooking facilities, cupboard, etc.

These personal contacts with teachers usually are useful in overcoming the resentment which may be felt concerning the imposition of an added classroom activity. Teacher interest is increased when it is demonstrated that school lunches and nutrition teaching may be successfully integrated with other class-

room subjects and activities. Some teachers become more amenable to the idea when they learn that lunchtime duties can be delegated to the pupils. Others adopt the scheme from a more selfish standpoint, namely that they bring their own lunches and enjoy a hot supplement at noon. The basic appeal, however, stresses the health benefits to be derived.

Further contact throughout the year is accomplished through personal letters to the teachers and a third visit between Christmas and Easter. This helps to maintain the interest of teacher and pupils alike.

In 1947 an evaluation sheet, based on a publication of the Federal Nutrition Division, was sent to schools conducting lunch programs in a particular area. The results of this survey were made known to each teacher as a means of demonstrating the benefits accruing from the school lunch project. In reading the replies it was noted that many of the teachers, in reporting firsthand impressions, stated their opinion that a well-planned school lunch program pays dividends in improved learning ability, lessened fatigue and absenteeism, improvement in content of carried lunches, and an increased interest in foods that promote increased weight and height. These improvements are probably not due to nutritional reasons alone, but because school is more attractive and more interesting to the pupils if a lunch supplement is provided.

The interest of the teachers is further promoted by sending them summaries of suggestions for supplements and of plans for raising money for food supplies. These were complied from reports previously received from each teacher in response to questionnaires sent from our office. Another means of maintaining their interest is through the medium of educational releases. Messages from our division are frequently inserted in the *"Teachers' Bulletin"* sent out monthly from the office of the County Superintendent; and in the *"Forum"*, a monthly publication of the Provincial Department of Education.

(2) *Overcoming the Indifference of the Community*

At an early date following the first fall visit to the school, a meeting of parents, teachers, and other interested persons is arranged. Frequently special invitations are received from certain community organizations. If at all possible the district public health nurse also attends such meetings. An effort is made to have the meeting interesting and lively; movies, attractive posters, and pamphlets are extremely helpful. Sooner or later the meeting develops into informal discussion groups with a brisk interchange of questions and answers.

Another means of arousing and maintaining public interest is through the more diffuse media of press and radio. Several times a year our division prepares progress reports of school lunch activities; these are released to the press and radio through the Provincial Bureau of Information.

We have found that the most successful programs are those which have active community support. Moreover, community participation widens the sphere of influence in nutrition education. For example, in several of our rural programs, a school lunch committee is formed, comprising teachers, older pupils, and members of local organizations. Such groups plan food purchases and weekly menus, and the community displays as much interest in the pro-

gram as do the teachers and pupils. Many parents are educated in nutrition through their children. Pamphlets on nutrition and school lunch, if not distributed at meetings, are taken home by pupils.

(3) *Demonstrating the Need to the School Board*

During her first visit to a school the nutritionist learns the names of the trustees and, if time permits, she contacts the secretary. An appeal is made for the support of the lunch program and sometimes, in the case of larger schools, financial assistance is solicited. The health benefits of the program are stressed, as is the value of the school board's co-operation with the teachers.

(4) *Convincing Older Pupils of the Benefits*

Although much useful material is available for promoting nutrition education, it still seems difficult to find or to prepare teaching aids which appeal to the teen-age group. Many of our teen-age boys and girls do not participate in the school lunch program because they have not become convinced that it is a good thing. For this group, we are of the opinion that health habits must be promoted in a manner that will appeal to a personal sense of happiness, buoyant good health, and popularity. For boys, the athletic approach usually scores; most teen-age girls respond to an approach which emphasizes good looks, clear skin and vitality. This point was well brought out by a public health nurse who, when asked to conduct a health course for teen-age girls, could scarcely cope with the response after she had publicized a series of "Health and Beauty Club" gatherings.

(5) *Promoting Lunch Programs of Longer Duration*

The idea of providing something hot at noon is too often given priority over the need for supplementing inadequate carried lunches with nourishing foods and there results the almost universal procedure of providing a hot lunch supplement during the winter months only. In too few instances the contents of lunch boxes are assessed for nutritional value. Such a procedure is not difficult. For example, if it is found that the diets of pupils in a certain district are lacking in vitamin C, foods contributing this essential should be offered as a lunch supplement. This procedure has an educational value if information is given to the parents by means of literature, newspapers, etc., with emphasis on the value and the available sources of ascorbic acid.

Teachers and pupils must be educated to realize that the supplement served at lunchtime should contribute nourishment, and is not intended merely to provide warmth to the child. A hot dish does encourage pupils to enjoy a more leisurely lunch period. But it should be realized that in many small rural schools a fire cannot be kept on in the wood-burning stove after the onset of warm spring weather. This is the time to promote the use of supplements such as cold milk, fruit, whole wheat bread, vitamin D, and the like, according to the specific need of the school.

If a school lunch program is to become permanent, it will be necessary to have (1) a more intensified educational program, (2) additional public health

personnel to assist in carrying it out, and (3) a school lunch supervisor on the provincial level.

II—*Fundamental Problems*

(1) *The Lack of Adequate Teacher Training*

For the past several years the Home Economics Department of the New Brunswick Teachers' College has given increased emphasis to school lunch instruction. However, a great deal remains to be accomplished in its integration with the general program of health teaching.

Coupled too often with the problem of ineffective teaching methods is the teacher's lack of basic information. In our own experience, there has been too little opportunity for nutrition instruction to teachers in training. Summer schools offer opportunity for some in-service training, but comparatively few of the teachers can be contacted in this way.

A partial solution of this problem is soon to be offered in New Brunswick. The present six-months' normal course is to be extended to one year beginning next fall, with a view to extending the course to two years when the supply of teachers has increased. Secondly, beginning next September the Department of Health will place a public health nurse, with specialized training, on the staff of Teachers' College. This means that the College will now be able to offer a full-time course in health education, including nutrition.

It should not be forgotten that in urban schools and in rural regional high schools, where home economics is taught, students receive more concentrated courses in nutrition. The main problem is the lack of adequate nutrition instruction in the elementary grades.

(2) *The Inadequacy of Some Health Textbooks*

Textbooks on health have improved over the years but, as previously suggested, the majority of teachers do not learn how to apply health information to practical situations.

As long as certain text books present nutrition in an uninteresting manner a well-organized school lunch program can help by providing a practical demonstration of good health habits. A child learns to enjoy good food, not by memorizing the nutrients contained therein, but by actually eating the food which he has helped to prepare. Considered more broadly, a child's active participation not only contributes physical nourishment and the development of desirable food habits, but serves to teach co-operation, orderliness, cleanliness, the joy of friendly companionship, the act of leisurely eating in a happy atmosphere, good manners, courtesy, and the development of social graces. The school lunch program and nutrition teaching may be integrated with other classroom subjects: art (preparation of place mats); composition (essays, for example "Why We Drink Milk"); social studies (foods in other lands and ages); arithmetic; spelling; reading; and many more. Until such time as the entire school curriculum may be revised, it will be difficult to adequately promote such integration. In the meantime, those of us who do have an opportunity to work with teachers should attempt to guide them in methods which make nutrition teaching more attractive and more effective.

(3) *Inadequate Numbers of Qualified Field Personnel*

New Brunswick is not the only province suffering from a lack of trained field workers. The fact remains, however, that in New Brunswick, with a total of some 1,500 rural schools, the work of active school lunch promotion has fallen upon three field workers. Two of these are nutritionists with the Provincial Department of Health; the third, up to June of this year, has been the Provincial Red Cross nutritionist.

An attempt has been made to utilize the services of the three field workers to the best advantage. This has been accomplished largely through the appointment of a Provincial School Lunch Committee comprising six members who represent the Provincial Departments of Health, Education and Agriculture, and, until this month, the Provincial Red Cross Society. The Committee decided at the onset to concentrate work in specific areas rather than to attempt to spread the work thinly over the entire province. Thus, one or two counties are selected each year for field work by each nutritionist. If possible, two years are spent in each area because experience has shown this to be essential if the interest of the teachers is to be maintained.

The question of financing rural school lunch programs has not been stated as a major problem. Apart from basic equipment, which is provided in almost every county with the approval of the County Superintendent of Schools, financing is largely a local problem. With regard to food, each school is encouraged to raise its own money for this purpose. This is accomplished in devious and interesting ways, and the pupils benefit from such active participation in their lunch projects. In a great many cases schools receive the whole-hearted support (including financial assistance) of local organizations such as the Women's Institute, Home and School Association, school board, church groups, Red Cross Branches, etc.

In connection with co-operation, I should like to pay a tribute to our public health nurses, without whose aid the school program would be seriously handicapped. Through the joint participation of the nutritionist and the nurse in school visits it is possible to relate nutrition and good eating habits with the habits of good health. Most health principles may be practically applied in a successful school lunch program. We have also enjoyed the full co-operation and support of medical officers in the promotion of school health projects.

The major problems encountered in the promotion of rural school lunch programs in New Brunswick have been discussed. Doubtless they are similar to problems existing throughout Canada. I feel confident that these problems are not insurmountable. In time and with the concerted effort of all individuals, departments and agencies concerned with the improvement in health of children, the difficulties will be overcome.

Progress of Mental Hygiene Programs in Public Health in Canada

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THE distinction between preventive work and treatment is often difficult to make in the activities of modern health departments. The two aspects of the work are so interrelated in many fields of public health endeavour that there is little point in trying to distinguish them. This is certainly true of the work of the mental health clinics, the chief public health activity in the mental health field apart from the administration of the mental hospitals. This paper deals not with the mental hospitals, but rather, with the community services in mental health where the emphasis is upon prevention and early treatment.

It remains to be demonstrated that the psychoses, the mental illnesses shown by the great majority of mental hospital patients, can be prevented. I would like to emphasize, in passing, the great variety of conditions met with under the heading of psychosis. The schizophrenics make up the bulk of the mental hospital population. Authorities believe that an important factor in the development of this condition is a progressive maladaptation of the individual to his psychological environment—the individual acquiring in childhood behaviour patterns of withdrawing from the difficulties of everyday life and living more and more within himself until he lives in a world peculiar to himself and his behaviour becomes bizarre. Whether there is also a major alteration in physical function as an etiological factor in schizophrenia remains to be proved, but there are findings that suggest that this is so. The second largest group of psychotics admitted to mental hospitals is the manic-depressives. Such persons have swings of mood which under sufficient stress become accentuated into euphoric, overactive manic behaviour or slowed, uninterested, depressed behaviour. The organic psychoses include those due to cerebral arteriosclerosis, cerebral syphilis, encephalitis, alcoholism, bromide intoxication, Huntington's chorea, etc. Other psychoses are involutional melancholia, the depression with peculiar somatic delusions, that appears sometimes in men and women at the involutional period; and paranoia, a mental illness marked by great suspiciousness and delusions of persecution, and going on to ideas of grandeur on the basis that one must be a very important person to have so many enemies.

In addition to the psychoses, mental health involves consideration of other,

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more frequently occurring conditions shown by persons who do not become mental hospital patients, persons with neuroses, the mental defectives, the epileptics, the constitutional psychopathic inferiors, and the cases of behaviour disorders in which none of the aforementioned types of psychopathology is present. The field of mental health work has been broadened to include many types of behaviour which have only in recent years been regarded as other than moral problems, or problems due to inherent perversity or to weakness of character—such as chronic alcoholism without psychosis, narcotic drug addiction, sexual deviations, delinquency—and such seemingly normal behaviour as marital discord. Also, the psychic component in bodily illness, whether in the so-called psychosomatic group or in more exclusively somatic disease, is receiving more attention.

Of the clearly psychiatric conditions, the largest group by far is the psychoneuroses and these are the most hopeful from the standpoint of relieving symptoms and increasing social effectiveness and also, it is believed by many, from the standpoint of prevention. In the psychoneuroses and in some of the other types of behaviour mentioned above, the ways of reacting to persons and things that were developed and became habitual in childhood appear in a great many cases to be at the root of the defective behaviour in adult life. This finding suggested the idea that is basic to preventive mental health work with these large groups of problems—to ensure that childhood training develops healthy patterns of reacting. At the same time as exploring such preventive possibilities the search for organic factors in these illnesses should not be neglected but should be pursued diligently.

It has been said that psychoneurosis is probably second only to the common cold in frequency of occurrence. The term is variously defined but essentially it is a matter of one developing symptoms more or less incapacitating, such as anxiety, depression, obsessions, or one or more physical symptoms without physical cause while at the same time having, unlike the psychotic, a fairly good appreciation of the world of people around one. A very large number of persons have a reaction of this type at some period in their lifetime. It is a result of stress acting upon a predisposed individual. The amount of predisposition that an individual has to react in this way to stress depends largely upon his childhood experiences. It shows in certain indications of instability both in adult life and in childhood—sleep disturbances, bedwetting long past the usual age of its cessation, having phobias, etc. What constitutes stress is in some degree peculiar to the individual—in one person it will be having too much responsibility put upon him; in another who has successfully faced heavy responsibilities it will be marital disagreements; in a third, who could easily carry the responsibilities or marital discord that led to breakdown in others, it will be economic difficulties. The symptoms that develop are related less to the type of stress than to the pattern acquired in childhood of meeting difficulties. Predisposition is a matter of having inadequate habitual modes of reacting to difficulties and is due to being faced too early with too much stress—lack of love, rejection, etc.—and to acquiring from one's parents' example inadequate patterns—anxiety, fears, etc.—for meeting ordinary diffi-

culties of life. There may be also some constitutional factors in the psychoneuroses but there is far more evidence for the environmental than for constitutional factors.

Many authorities in this field believe that a great deal in the way of prevention can be done through education of parents in how to train children. This has yet to be put to the acid test in a research project scientifically controlled over a period of years. However, there is no doubt about the results of early treatment of psychoneurotics, and often enough of psychotics, in preventing the development of more seriously handicapping degrees of the ailment. And there is also no doubt about the results of treating children, adolescents, and young adults who have behaviour or personality problems. It has been demonstrated to the satisfaction of many who have had contact with them that mental health clinics have, as Dr. C.-E. A. Winslow has said, "enormous power to turn ineffectual and unhappy people back into effectual and happy people."

The mental health service in a community commonly begins with establishing a mental health clinic. This clinic has two major functions—treatment of mild and incipient mental health problems, chiefly behaviour problem children and psychoneurotics, and staff education. Of these two functions, informing the public health staff with regard to mental health matters is the more important, because mental health work is the job of every member of the public health department. It should never be considered as the job of only the mental health clinic workers.

Among staff education programs, the courses given to public health nurses are of interest. In Ontario, 45 supervisors and senior nurses on the provincial department's staff who work in the county health units and the outlying areas of the province were given one month's training at the Toronto Psychiatric Hospital, one or two being brought in at a time. The results of this have been such that it is hoped to bring in all the public health nurses for a period of training. At London, Ontario, a 2-weeks' orientation course in mental health is given the nurses in new county health units in that part of the province. In Saskatchewan every public health nurse employed by the provincial Department of Health has had one month's training at one of the provincial mental hospitals. During this period part of her time was spent in a mental health clinic. After return to her home district, the nurse assists the travelling mental health clinic, when it comes to her area, by obtaining the social histories on cases referred and doing follow-up work according to the recommendations of the clinic. In British Columbia, where the provincial government has social workers in all parts of the province in addition to public health nurses, over fifty nurses and social workers have had a period of observation and orientation at the provincially operated mental health clinic in Vancouver.

A mental health clinic is a team of professional specialists in three fields of knowledge—psychiatry, psychology, and psychiatric social work. It is the psychiatrist's part to take the final responsibility for the investigation and treatment of patients and to play a major role in the work of staff education. It is the psychologist's function to bring to bear on the patient the additional

light that this science can throw on personality problems. The psychiatric social worker follows up the recommendations of the clinic in modifying the environmental stresses on the patient and assists the patient in developing somewhat different attitudes. Both the psychologist and the psychiatric social worker will also take part in the staff education function of the clinic.

It is generally accepted that there should be one such full-time clinic for every 100,000 of general population. Such a clinic costs in the neighbourhood of $20,000 to $25,000 a year, including necessary clerical help and transportation expenses. A clinic, unless it is attached to a special body, such as the educational system or the juvenile court, may well be a general-purpose clinic, seeing both adults and children, but of course at different clinic sessions. It is important that there be, in a community where a mental health clinic is going to operate, local agencies with social work and recreational functions which can cooperate with the clinic in helping patients, whether children or adults. For this reason, it is well to have the backing of social work and recreational agencies in the project of starting such a clinic.

Great variety in patterns of functioning exists among mental health clinics. They may be operated by voluntary bodies, such as community chests, but the tendency in recent years has been for official bodies to take a larger part in this field. So there are in Canada mental health clinics operated by provincial departments of health, municipal departments of health, children's hospitals, general hospitals, and other agencies. Whether a clinic is for adults only, for children only, or for both, depends upon the organization sponsoring it. A clinic established to serve school children, whether it is under the department of health of the municipality or the board of education, will devote the bulk of its time to children of this age group, but may find time to broaden its efforts, outside school hours or during the long school holidays, to pre-school children and perhaps adults.

Some clinics are stationary, operating perhaps in a general hospital outpatient department. Some hold clinic sessions in different parts of a municipality, e.g., in child health centres. Some are travelling clinics that serve a large geographic area, including several counties. Some clinics are part-time on the part of all staff or on the part of the psychiatrist, but usually they are full-time, especially in the case of the psychiatric social worker and the psychologist. That part-time service exists is largely due to the shortage of trained workers. Part-time service is definitely worthwhile, until the staff situation corrects itself. It may be anticipated that this situation will improve greatly over the next few years, in view of the large amounts that are being spent on training of all types of mental health personnel. Expansion of training facilities for graduate work in psychiatry, psychology, and psychiatric social work at several of our universities, and granting of bursaries by the provinces out of federal Mental Health Grant funds, in addition to what they were previously doing in these directions, will make many more workers available within the next three to four years.

In establishing policy for a mental health clinic, it is important that the intake of cases be limited. Otherwise you will have, due to the demands put

upon it, a diagnostic type of service only. It is important that a clinic undertake treatment and follow-up of a proportion of its patients, whether in a relatively superficial but nevertheless effective way through manipulation of the environment or in more intensive work in changing the attitudes of the patient and those he lives with. A clinic will, of course, see some patients for whom accurate diagnosis is all that the clinic can do, with perhaps some recommendation to another body as to disposal, e.g., in low-grade mental defectives and in some cases referred by the courts. But in the great majority of cases there can be and should be some active treatment for the sake of the patient, for the sake of the staff, and for demonstration to the general public that the patients with whom the clinic deals can be helped. The limitation of intake is a difficult problem. It is absolutely necessary for a clinic to have the goodwill of the referring agencies—private practitioners, social agencies, schools, etc., as well as the general public. But some screening of cases before they are accepted, and especially before they are taken on for treatment, is necessary. I think that the medical officer of health who is establishing a mental health clinic should make this point clear beforehand to the prospective referring agencies who are often enough urging him to undertake this additional work.

There is continuing need for analysis of the effectiveness of mental health clinic procedures. These clinics are a development of the last twenty-five or thirty years. The clinic personnel itself should be encouraged to undertake this, especially in regard to treatment measures, but the public health administrator should analyse the larger policy questions, e.g., whether one month, two months, or three months is a sufficient period for a public health nurse to be attached to a clinic in order for her to carry back into her generalized public health nursing work a viewpoint which will permit her to see mental health problems where they exist, for example in a mother's attitude towards her baby as shown in the well-baby clinic, in the troublesome behaviour of a pre-school child, etc.

One year ago there were fourteen full-time mental health clinics in Canada, including clinics operating in school systems, and five part-time clinics. Since then, twenty-two additional clinics have begun work or are planned to start in the near future. Even so, we are a very long way indeed from having the number of clinics necessary in this country, at the rate of one per 100,000 of general population.

A brief résumé of the situation across Canada with respect to mental health clinics is as follows:

Newfoundland has a part-time out-patient clinic in St. John's operated by the mental hospital staff.

Prince Edward Island has no mental health clinic but plans to start one just as soon as personnel is available. The Island has a population of 100,000, mostly rural. This clinic, in view of the compact area and population it will serve, may be able to take on a rather wider range of problems than will be the case with clinics in the other provinces.

Nova Scotia has had for several years a part-time mental health clinic operating in the Public Health Building of Dalhousie University in Halifax. There is also a psychiatrist attached to the Provincial Department of Welfare whose duties include examining at various centres in the province children for whom adoption proceedings are contemplated, juvenile delinquents, and mentally deficient children for admission to the Nova

Scotia Training School. The provincial Department of Health is establishing two mental health clinics, one to function in the southern half of the province and the other in Cape Breton and the northern part of the mainland.

In New Brunswick there are no community mental health facilities except the part-time psychiatric clinic in the Saint John General Hospital. However, a beginning has been made by the provincial Department of Health in getting the personnel for a mental health clinic, and as soon as a psychiatrist is available the clinic will get into action.

The provincial Ministry of Health of Quebec has maintained no mental health services, per se. The mental health division of the provincial department is concerned with certain administrative aspects of the care of the mentally ill in the mental hospitals which are run by private bodies, such as the Congregation of the Grey Nuns, the Protestant Mental Hospital Corporation, etc. It was announced just a few days ago that a great expansion of mental health work in Quebec is planned with the aid of the federal Mental Health Grant. Mental health out-patient and in-patient services will be established in five general hospitals in Quebec City, and in six general hospitals serving the French-speaking population of Montreal. The clinic facilities of the Psycho-Social Centre in Quebec City and of the Mental Hygiene Institute in Montreal will be considerably expanded. A day hospital for mild and incipient mental health cases will be established in connection with the Montreal General Hospital. It is planned that the Mental Hygiene Institute and the Verdun Protestant Hospital will jointly conduct a mental health clinic that will serve the English-speaking centres of populations outside of Montreal. Also, the Psycho-social Centre in Three Rivers has taken on mental health workers—a psychiatrist, a psychologist and several psychiatric social workers—to work with the problem children of the area between Montreal and Quebec. The municipal Department of Health of Montreal has had for several years a mental health division staffed by psychiatrists, and psychologists whose field of work is the school children of the city, both Catholic and Protestant.

In Ontario the Department of Health operates four travelling mental health clinics and one stationary clinic, the latter at the Toronto Psychiatric Hospital. These clinics are staffed by psychiatrists, psychologists and social workers. The Ontario department has also placed a psychiatrist in some of the more populous areas where there had been only a part-time mental health service. Thus, a psychiatrist has been stationed in the Niagara Peninsula to serve three medium-sized cities and surrounding counties, and another has been stationed at the Victoria General Hospital, London. These two men act as consultants on in-patients in the general hospitals, as well as conducting out-patient service.

Several municipal health departments in Ontario have undertaken mental health services. The Mental Hygiene Division of the Department of Public Health of Toronto has been in existence since 1919. It is staffed by psychiatrists, psychologists, nurses and social workers, and not only sees children who present behaviour problems but is also the official body for the examination of pupils for the classes for backward children. The municipal Department of Health provides also a full-time psychiatrist to the Juvenile Court. The City of Hamilton has recently established with the aid of federal Mental Health Grant funds a mental health division with a full-time psychiatrist as director. The salaries of part-time personnel for clinic service have been supplied to the suburban Township of York and to the City of Oshawa through the Mental Health Grant. Several other municipalities, counties as well as cities, have shown interest in establishing mental health clinic services and action may be anticipated just as soon as personnel becomes available. The National Committee for Mental Hygiene has in recent years provided a clinic service for children referred by social agencies of Toronto and this centre has been used for the training of psychiatric social workers.

In Manitoba, the provincial Department of Health provides a very active out-patient service at the Psychopathic Hospital, Winnipeg, and a part-time mental health clinic service in the City of Brandon. A full-time travelling clinic with Selkirk as its base and a full-time clinic in suburban Winnipeg are being established with Mental Health Grant funds. The City of Winnipeg provides a mental health clinic service for the schools. The

psychiatrists are employed by the city's Department of Health and the psychologists and visiting teachers by the Board of Education.

In Saskatchewan the Provincial Department of Health maintains a part-time mental health clinic in Weyburn. It provides also a full-time clinic team, consisting of psychiatrist, psychologist, and social worker, in each of Regina and Saskatoon, with the aid of federal Mental Health Grant funds. Part-time clinic service is also provided at Moose Jaw and Swift Current.

In Alberta the provincial Department of Health maintains a full-time travelling clinic fully staffed, centred on Calgary. Another, centred on Edmonton, has been established recently with Mental Health Grant funds.

In British Columbia the provincial government maintains two stationary mental health clinics, at Vancouver and Victoria, and one travelling clinic.

The Metropolitan Health Committee of Vancouver provides the services of a psychiatrist for the students in the public schools, the Normal School, and the University of British Columbia. The staff of this Vancouver municipal mental health service and that of the provincial clinic in Victoria have been extended through aid from Mental Health Grant funds.

Turning now to the other aspect of preventive mental health work, the wider one of ensuring that healthful habits of reacting are acquired by all children during childhood, this is a matter of informing and assisting parents and teachers, primarily, but also any other persons who are concerned with the care of numbers of children, such as social workers and recreational workers. These latter groups are being reached through instruction in their professional training schools and through on-the-job contacts with public health personnel who are already informed with regard to child training methods and mental health problems.

The school teachers are a very important group in this connection, having lengthy contact with children. Teachers are anxious for enlightenment on how to help children to grow into adults with good mental and physical health. The provincial departments of education have shown increased interest in recent years in taking advantage of the knowledge that exists on child training and have introduced courses in this field into the teacher-training schools and into the curricula of summer schools. The problem of selection, from the mental health view-point, of those to enter upon teacher training is one that has yet to be attacked in a comprehensive manner. The development of more flexible courses of study in the elementary schools has in recent years made important provision for individual difference in learning ability among pupils. The establishment of special classes and special curricula for mentally retarded children was a major mental health measure—it has resulted in these children being less frustrated and developing more serviceable social attitudes, and in less truancy and delinquency in this group of children.

A very significant development in connection with mental health work in schools has occurred in the past year. This was the establishment of a one-year training course for experienced teachers on mental health in relation to school practices. This course is conducted by the Extension Department of the University of Toronto in cooperation with the National Committee for Mental Hygiene, at the schools of Forest Hill Village, a suburb of Toronto. The purpose is to give selected teachers some instruction and practical experience in

the management of children's behaviour and personality problems and in the classroom presentation of mental health principles. These teachers will return to their own communities and will serve as instructors in mental hygiene for the other teachers in the schools of the region, and as liaison between the school and the mental health clinic in those cases which it is necessary to refer to the clinic. Twelve teachers were selected for this course one year ago by the departments of education and health of the provinces. The Mental Health Grant was used to provide stipends for some of these teachers, as well as to pay salaries of the necessary instructional staff for the course. If it is demonstrated after their return to their home communities that these teacher-psychologists or liaison officers fulfil the expectations that mental health authorities have in work of this type, it is very likely that training centres, similar to the one established by the University of Toronto, will be set up in several of the university centres in Canada.

In informing parents on child training methods, there has been going on for years a considerable amount of individual instruction by various public health personnel, social workers, and other professional workers. There has also been a growing amount of group instruction of parents by various specialist personnel such as nursery school workers, child psychologists, and specially trained public health nurses and social workers. The importance of this group work was recognized by the Department of Education of Ontario four years ago by the appointment of an experienced psychologist to direct parent education activities. The result of this is that, in addition to the not inconsiderable number of spontaneously organized groups of parents concerned with child training, there have been organized with official aid a large number of groups all over the province, to whom the provincial department sends special lecturers periodically in addition to providing guidance from the full-time director of the program. This is a type of service for which there is much demand. It is important that the guiding of it be in fully competent hands. The organization and running of parent groups could be as well in public health hands as in those of education. I know of two municipal departments of health that have undertaken this type of service. The important thing, whoever runs it, is to ensure that competent and commonsense personnel are secured to conduct the program.

At least two questions probably occur to you about this type of endeavour. First, do we know the answers to give to parents' questions? While it must be admitted that we don't know the final truth on many matters yet, enough is known to be of a great deal of help to parents. If medical men generally were to wait for full and final answers, a great many conditions would go untreated. There is much soundly based information on the psychological side of child training which should be made available to parents in the interests of the mental health of our future citizens.

Another question that has been raised before in connection with the informing of parents is "How are you going to reach the parents who need this information most? They are the very ones who are not interested." Well, there is certainly value in making the information available to those who want it. We

didn't stop immunizing because it was hard to get cooperation from certain groups. The way the demand for information in child training has spread and increased in the past ten years is remarkable. You will recall that twenty-five years ago when nursery schools and parent education were first begun in this country it was only a very small group of parents who were interested and they were looked at rather pityingly with the feeling that it must be because they had very difficult children that they were going in for this fad. Today parents of all economic levels are interested in giving their children the advantages of informed training in the home.

In addition to study groups of parents, literature has an important part to play in this field. Some of the provincial departments of health have published excellent material. For example, the series of leaflets produced by the Ontario department during the 1930's on children's behaviour problems was noteworthy. The B.C. department publishes an excellent booklet, "Understanding the Normal Child". The Department of National Health and Welfare has produced a series of pamphlets on various problems in child training. These are on such subjects as Fear, Temper, Feeding Habits, Sex Instruction, Bedwetting. Additional subjects to be dealt with in pamphlets to appear shortly include Stammering, Nervous Habits, Lying and Stealing. These have met with very wide acceptance, being extensively used by public health nurses, social workers, and Home and School clubs, as well as mental health clinics. The Department of National Health and Welfare undertook the publication of literature in this field at the request of the Dominion Council of Health. It was considered reasonable to produce literature centrally as the problems are the same across the country and this material can be produced more cheaply by a central body. The federal department has two other publications in hand which will be in print within a few months—a 60-page booklet, "The Backward Child", in which the home care and training of the mentally deficient child unable to attend school is treated, and "Up the Years—One to Six", a 200-page booklet dealing with physical and mental aspects of the training of normal children in this age range.

Films are a very effective means of interesting people in a subject and of getting across one or two points. To get the most out of a film it is well to have a discussion guide or leaflet accompany the presentation of the film. The Department of National Health and Welfare has sponsored the production of several films in this field. "Know Your Baby", a 15-minute film in colour, deals with psychological aspects of the situation in a home when a new baby arrives. "Why Won't Tommy Eat?", a 20-minute film in colour, is concerned with the psychological aspects of feeding problems in children. The first of a series dealing with the normal pattern of emotional development in children has just been produced. It is called "He Acts His Age" and is a 15-minute colour film. The widely known Mental Mechanisms series deals with child training incidentally. There have been three films produced in this series—"The Feeling of Rejection", "The Feeling of Hostility", and "Over-dependency". The first one, "The Feeling of Rejection", has been shown sufficiently widely for it to be evident that it will be very useful for a long time to come as

a means of interesting parents, teachers, and others in this field. In addition to the films sponsored by the Department, a health film library is maintained in which a print of every film of importance in the child-training field is available to health agencies and other interested groups anywhere in Canada for a rental of about one dollar.

The radio has not been extensively used in this country for the education of parents in child training methods. There have been some excellent programs dealing from one angle or another with children's behaviour. Radio has been used considerably in public education work with regard to mental health —in the effort to widen people's understanding of the position of the mentally ill, and of the nature of mental ill-health and its diverse manifestations in bodily symptoms as well as in behaviour, and also to emphasize the importance of early treatment.

Of literature aimed at informing the public about the general field of mental health, there has been little produced in Canada. It is very important that any element of mystery about mental illness be dispelled; that a correct appreciation be given of our mental hospitals as treatment institutions from which 50 per cent of discharges occur within four months of admission and 65-70 per cent of admissions are discharged within one year; that people take advantage of opportunities for early treatment in these illnesses, etc. The federal department has produced a small booklet on this subject, a Mental Health Supplement to "Canada's Health and Welfare". All of these federal publications are available without charge and are distributed by the provincial departments of health.

I have said very little about research in mental health problems—for the very good reason that, compared to the immensity of the field both in number of cases and in variety of conditions coming under the heading of mental health problems, there has been very little research work done in this country. In 1947 it cost more than $25,000,000 to maintain the mental hospitals of Canada—to mention only that part of the problem—and yet in all Canada little more than $25,000 was spent on research in these problems. However, since the inception of the Mental Health Grant several additional research projects have been got under way. It is regrettable that with only two exceptions the researches under the Grant are strictly laboratory approaches. The two exceptions are worth mentioning—one is a study on the care of geriatric patients outside of hospital, and the other a study of social factors in illness, with particular emphasis on the etiology of the psychoses and psychosomatic conditions. Research is needed to throw light on and to give direction to our preventive and treatment efforts in many aspects of the field. Epidemiological studies are needed—they have never been undertaken in Canada—to tell us precisely the extent of the various mental health problems and of various factors related to them. A discovery that would reduce the occurrence of schizophrenia by only 10 per cent would mean a tremendous monetary saving, to mention that aspect only, in the light of the fact that schizophrenia accounts for the bulk of the chronic mental hospital population. It is quite possible that methods will be discovered to prevent recurrences of the manic-depressive psy-

chosis which accounts for 30 per cent of the re-admissions to mental hospitals. Investigations of effective means of psychotherapy producing results from shorter periods of treatment are badly needed.

For long it was the complaint of the mental hygienist that he couldn't get money to get things done. A considerable amount of money is now available. The Mental Health Grant of $4,000,000 a year, increasing by $1,000,000 every two years to a maximum of $7,000,000, is the greatest single development that has occurred in the history of mental health work in this country. The bottleneck at present is the shortage of trained personnel. Considerable sums are being devoted by the provinces out of their portions of the Mental Health Grant to training purposes. The University of Toronto will spend $235,000 this year on expanding training facilities for a wide variety of personnel required in mental health work. Dalhousie University has instituted postgraduate training in psychiatry and the Maritime School of Social Work has begun training in psychiatric social work through the pooling by the Maritime Provinces of portions of their mental health grant. Laval University, McGill University, and the University of Montreal have given considerable numbers of bursaries for postgraduate training of psychiatrists, psychiatric nurses, and psychiatric social workers. The University of Western Ontario is providing bursaries and is conducting a workshop in clinical psychology this summer. The facilities for the teaching of clinical psychology at the University of British Columbia have been considerably expanded. Many of the provinces have sent men and women away for training to centres in Canada, the United States, the United Kingdom, and France. It will be three or four years before the benefits of this training program are seen, and it will be five to ten years before the full impact of these training measures is felt.

In Canada mental health is recognized as pre-eminently a health field and therefore a function of health departments. In some countries this is not the case—much of mental health work is in other hands. While recognizing the important part that other professional workers have to play in this field, I believe that the health department is the place where central direction of the mental health program should be.

Trichinosis on Southampton Island, N.W.T.[1]

MALCOLM BROWN, L. B. CRONK, F. DESINNER, J. E. GREEN, J. E. GIBBONS[2] AND E. KUITUNEN-EKBAUM[3]

THE suspicion that trichinosis existed on Southampton Island, N.W.T., arose in 1947 when a high percentage of eosinophilia was found (Brown et al., 1948) and when case histories were found to include a number of illnesses characterised by fever, abdominal pain, pain in arms and legs, and oedema of the face. In the summer of 1948 the problem was pursued both from a clinical point of view and by the collection of specimens of muscle from five of the larger mammals. Examination of these by one of us (E.K.) revealed the larvae of *Trichinella spiralis* in two of the three polar bears (*Thalarctos maritimus*) in the series (Brown et al., 1949).

Clinical Data

Some of the food habits of the Eskimos facilitate their infection with *Trichinella spiralis*. Their meat is usually stewed in fairly large pieces until it is what we would call well done on the outside and medium well done in the centre. On many occasions, however, it is cooked less than this and on some occasions not at all. If fuel is scarce or if they are in a hurry, meat will be eaten raw, and at times the meat of the freshly killed animal is eaten raw as a minor delicacy.

Trichinosis is a disease with such protean manifestations and the average Eskimo of middle age has suffered from such a variety of infections that it is difficult, on clinical grounds, to say with any accuracy how prevalent trichinosis has been in the recent past. Even when the matter was to the fore in our minds in 1948, it was difficult in field conditions to say how much existed at that time. The presence of typhoid carriers in the group being studied and numerous sporadic cases of typhoid fever added to the complexity, but during the clinical examinations in the summers of 1947 and 1948, ten persons gave stories of illnesses to which a presumptive diagnosis of trichinosis was attached. In these cases there was fever, anorexia, abdominal pain with generalised tenderness, diarrhoea particularly in the early stages, and severe aching pain in the muscles of the arms and legs. One case showed oedema of the face. All cases were self-limited.

Laboratory Data

No muscle-biopsies were performed on these cases and no opportunity has as yet arisen to carry out a post-mortem examination on a subject sus-

[1]*This work was supported by grants from the Department of National Health and Welfare and the Defence Research Board.*

[2]*Queen's University Arctic Expedition 1948.*
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pected of recent infection. The evidence of infection consists of the high incidence of eosinophilia and the results of skin and precipitin tests.

Eosinophilia

The incidence of eosinophilia in this group of Eskimos was found during routine haematological studies in 1947 to be surprisingly high. In one case there was an eosinophilia of 56 per cent and in 46 per cent of a group of 145 there was an eosinophilia of more than 5 per cent (see Fig. 1). In connection

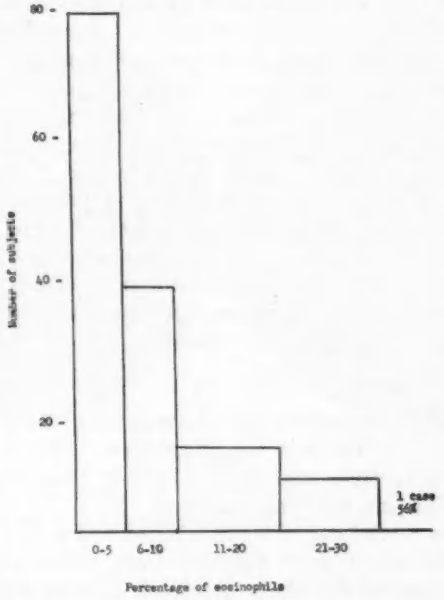

FIGURE 1.

The incidence of Eosinophilia in 145 Eskimos on Southampton Island.

with the present discussion it is to be remembered that parasites other than *Trichinella spiralis* may cause eosinophilia, but also that Spink (1934) has shown that in animals infected with *Trichinella spiralis* the eosinophilia is reduced following infection with *M. tuberculosis* or *Staphylococcus aureus*. A high percentage of this group of Eskimos was tuberculous and many of them had infected lacerations or scabetic lesions. It has previously been shown that there was no relation in this group between the occurrence of eosinophilia and infection with *E. vermicularis*, *Diphyllobothrium* and *Endamoeba coli* (Brown et al., 1948).

Skin Tests

Of a native population of about 265, skin tests were carried out on 195. The antigen used was "Trichinella Extract Lederle", an extract of dried,

ground trichinae, diluted in buffered physiological-salt solution to a dilution of 1 : 3000. Intradermal injections of 0.02 cc. of this extract were made on the volar surface of the right forearm and an injection of a control solution provided by the same firm was made on the left forearm. The injections were made at various times of the day and the arms were inspected after 20 minutes. In the first 40 subjects tested the arms were inspected after 24 hours as well, but as all the reactions in these subjects were negative by this time, the second inspection was discontinued. A reaction involving a wheal on the test arm which was 3mm. greater in diameter than the control wheal was interpreted as a positive reaction. On this basis, 91 subjects, or 46 per cent of the group tested, had a positive reaction. Many developed very large wheals with pseudopodia, and in 24 cases the test wheal was 11-28mm. greater than the control wheal. In 118, or 60 per cent of the cases, the erythema on the test arm was 3mm. greater in diameter than the erythema on the control arm. There were a few cases in which there was a positive reaction in terms of the wheal but not in terms of the erythema.

For purposes of comparison, 60 patients in the Kingston General Hospital were tested with the same batch of antigen. Their ages varied from 22 to 87 years. Four had test wheals which were 3mm. greater in diameter than the control wheal and in none of these was the test wheal more than 5mm. greater in diameter than the control wheal.

Precipitin Tests

Precipitin tests were carried out on serum collected at random from all the population except the very young children. The venipunctures were carried out at various times during the day, and before or at least twenty-four hours after the skin test was performed.

The tests were carried out with living larvae and with a prepared antigen. *Trichinella spiralis* larvae were obtained from guinea pigs and hamsters which had been infected 6-8 weeks previously. After removal of the skin and viscera, the infected carcasses were minced in the meat grinder and digested overnight at 37 degrees C. in a fluid made up of 1 per cent pepsin and 0.7 per cent HCL. The fluid was strained through two layers of fine cheesecloth or through a metal wire screen. The larvae were thoroughly washed in many changes of physiological saline until free of muscle residue, and were kept alive in the refrigerator. To prepare the antigen, the washed larvae were rinsed in distilled water, frozen at −40 degrees C. and dried *in vacuo*. The dried residue was thoroughly pulverized in a mortar and enough physiological saline added to make a stock solution of 1 : 100. The extraction was carried out in the refrigerator for five days with frequent shaking. The supernatant was then filtered through a fretted glass filter and stored for further use. For the test, 0.2 cc. of undiluted test serum was placed on the bottom of 5 × 50mm. tubes and overlaid with the larval antigen in dilutions of 1 : 100, 1 : 400, 1 : 800, 1 : 1600, and 1 : 3200. Normal human serum was used for controls, overlaid by similar dilutions of the larval antigen. The tests were read for the appearance of a precipitin ring at the interphase of the serum and test antigen after half an hour and one hour.

Precipitin formation around the larvae was observed by Oliver-Gonzales (1940), Mauss (1940) and Roth (1941), and originally used by Roth for diagnostic purposes. The tests in this series were carried out much the same way as originally used by Roth. *Trichinella spiralis* larvae were stored in the refrigerator, where most of the larvae remained alive for periods up to one month. The dead larvae were easily removed by shaking the tube and allowing the larvae to settle for a few minutes and then drawing off the saline; the live larvae descend sooner to the bottom of the tube while the

FIGURE 2.

Trichinella spiralis larvae: A—in normal serum, B—in immune serum (case no. 808), after incubation for 6 days. X 175.

dead larvae are floating in the fluid. The larvae were placed for thirty minutes in 1 : 10,000 solution of merthiolate and rinsed in several changes of sterile saline. A small drop of saline containing about 50 live larvae was placed in a sterile hollow slide, 4-5 drops of the test serum were added to fill the hollow, and covered with a sterile coverslip. The slides were kept at 37 degrees C. in a moist chamber and examined at intervals up to six days. The precipitates began to form around the larvae, especially at the oral opening, after a few hours' incubation. The controls remained clear for six days, after which the tests were terminated.

Of the 98 sera tested, 39 gave a positive precipitin test with living larvae and 25 gave a positive test with the antigen. In 15 cases a positive result was obtained in the test with living larvae, and a negative result in the test with the antigen. In 1 case, the reverse obtained. The relation between the results of the skin tests with the commercially prepared antigen and the results of the precipitin tests is shown in Table I for those cases in which both types of test were carried out. In those 6 cases where a positive reaction was obtained in one of the precipitin tests, but where the skin test was negative in terms of size of the wheal, the erythema surrounding the injection on the

test arm was at least 12mm. greater in diameter than the erythema on the control arm in five subjects.

TABLE I

RELATION BETWEEN SIZE OF WHEAL AND RESULTS OF PRECIPITIN TESTS

	No. of cases	Precipitin Tests			
		With living larvae		With antigen	
		Pos.	Neg.	Pos.	Neg.
Severe reactions Test wheal 11-30mms. greater than control	15	11	4	8	7
Mild reactions Test wheal 3-11mms. greater than control	29	12	17	8	21
Negative reactions Test wheal less than 3mm. greater than control	41	6	35	2	39

DISCUSSION

The final piece of evidence, the finding of the parasite in the muscle of man, has not been demonstrated in this group, but the demonstration of the parasite in one source of food, the high incidence of eosinophilia, and the facts that 40 per cent of the large sample studied showed a positive skin test and 40 per cent had sera which gave a positive precipitin test, all lead to the conclusion that trichinosis is probably quite common at the moment among the Eskimos of Southampton Island. This is not too surprising in the light of their habit of eating at times lightly cooked or even raw meat of carnivorous animals.

The precipitin test is considered an indication of active or recent infection and in view of the high number of positive tests, the clinical suspicion is borne out that trichinosis is prevalent now. Further support is lent by the fact that of 7 children skin-tested in their first year of life, 3 gave positive reactions. The incidence of positive skin tests in those over 40 years of age was not greater than that for the group as a whole. The highest incidence was found in those between 11 and 25 years of age. The duration of skin sensitivity following infection is not known but it is said to last at least three to four years (Warren et al., 1940).

The occurrence of *Trichinella spiralis* in the Canadian Arctic has been reported by the authors in a previous paper (Brown et al., 1949). In 1947 an epidemic in the Disco Bay region in Greenland was identified by Thorborg et al. (1948) and Roth (1949) as trichinosis. Dogs (*Canis familiaris*), polar bears (*Thalarctos maritimus*), the arctic fox (*Alopex lagopus*) and the bearded seal (*Erignathus barbatus*) were shown to be infected. Roth quotes Pedersen as stating that the disease has occurred in Northeast Siberia. Now it has been demonstrated in the Canadian Eastern Arctic. Evidently it is wide-

spread throughout the Arctic, a fact which has a bearing on the health of the natives and also the health of others who spend time there.

REFERENCES

1. Brown, Malcolm; Sinclair, R. G.; Cronk, L. Bruce; and Clark, G. C., with E. Kuitunen Ekbaum: Canad. J. Pub. Health, 1948, *39*: 45.
2. Brown, Malcolm; Cronk, L. Bruce; deSinner, F.; Green, J. E.; Gibbons, J. E., and E. Kuitunen-Ekbaum: Canad. J. Pub. Health, 1949, *40*: 20.
3. Mauss, E. A.: Am. J. Hyg., 1940, *32*: No. 2, Sec. D., 80-83.
4. Oliver-Gonzales, J.: J. Infect. Dis., 1940, *67*: 292.
5. Roth, H.: Acta. Path. et Microbiol. Scand., 1941, *18*: 160.
6. Roth, H.: Nature, 1949, *163*: 805.
7. Spink, W. W.: Arch. Int. Med., 1934, *52*: 805.
8. Thorborg, N. B.; Tulinius, Svend; Roth, H.: Acta. Path. et Microbiol. Scand., 1948, *25*: 778.
9. Warren, M.; Dranke, E. M.; Hawkes, R. S.: Ann. Int. Med., 1940, *13*: 2141.

A Note on Trichinosis in Dogs of the Canadian North*

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THE occurrence of trichinosis in Arctic dogs has been reported by Thorborg et al. (1) and Roth (2). These authors found that about 70 per cent of dogs in Greenland were infected with *Trichinella spiralis*. Connell (3) reports additional findings of trichinosis in sledge dogs in Alaska and Spitzbergen.

There have been no corresponding data for the Eskimo dogs in the Canadian North. Cameron et al. (4) made a study of the helminth parasites of sledge dogs in Northern Canada and Newfoundland but these studies apparently did not include trichinosis.

The present report gives the results of examination of the diaphragm muscle of four dogs in the Northwest Territories and the Province of Quebec.

The diaphragms of two dogs, one old male and a young female, were examined at Lake Harbour, Baffin Island. Neither of these showed any infection with *Trichinella spiralis*.

The muscle tissue of the third dog was submitted for examination by Mrs. Swaffield in Sugluk, P.Q. The specimen was accompanied by the case history supplied by the local Roman Catholic missionary. The dog, a female, nearly two years of age, came from Cape Hopes Advance; she had been sick one day and had tried to bite other dogs but did not bite human beings. The dog neither ate nor drank during the last two days but had been eating whale meat before her illness. She was shot on August 22.

Microscopic examination of the muscle showed about two larvae of *T. spiralis* per gram of muscle examined. The larvae were well encysted and some cysts showed partial calcification. The symptoms given in the case history, therefore, cannot be correlated with the above findings. It was not possible to examine the alimentary tract of the dog to exclude a possibility of the intestinal phase of early trichinosis.

The muscle specimen of the fourth dog was supplied by the Royal Canadian Mounted Police from Devon Island, Dundas Harbour. The examination of the muscle of this dog showed about 10 larvae per gram of muscle. There was no history of the case and it is not known whether the dog showed any symptoms suggestive of trichinosis. Further information about this case will be obtained at a later date.

This note is incidental to an extensive study supported by a grant from the Department of National Health and Welfare.

More investigation must be carried out before the sources of infection, the incidence and distribution of trichinosis in dogs of the Canadian Arctic can definitely be established.

REFERENCES

1. Thorborg, Niels B., Tulinius, S. and Roth, Hans: Trichinosis in Greenland. Acta Path. et Microbiol. Scandinavica, 1948, *25*: 778.
2. Roth, Hans: Trichinosis in Arctic Animals. Nature, 1949, *163:* 805.
3. Connell, F. H.: Trichinosis in the Arctic: A Review. Arctic, 1949, *2*: 98.
4. Cameron, T. W. M., Parnell, I. W. and Lyster, L. L.: The Helminth Parasites of Sledge-dogs in Northern Canada and Newfoundland. Canad. J. Res., 1940, *18:* 325-332.

Canadian Journal of Public Health

ACTH AND CORTISONE

LAST APRIL, at the annual meeting of the American College of Physicians, Dr. Philip S. Hench presented the findings of investigations in the Mayo Clinic on the effect of the use of cortisone on a small group of arthritic patients. The results of treatment, though temporary, being dependent on the continued administration of the compound, were so striking that within a few weeks the medical profession and the public alike were aware that an advance of the greatest importance had been made. Subsequently, encouraging results were reported using an extract of the anterior lobe of the pituitary gland known as the adreno-cortico-tropic hormone (ACTH). The work that has been carried on during the past months is still in the experimental stage and no final decisions have yet been reached about the value of these compounds in the therapy of arthritis and other diseases, nor has sufficient information been obtained regarding possible ill effects arising from their continued administration.

For many years it has been known that among the actions of the pituitary gland is its effect on the cortex of the adrenal gland. In 1933 Dr. J. B. Collip, now dean of the Faculty of Medicine at the University of Western Ontario, prepared a comparatively pure extract of ACTH and demonstrated its power in influencing the secretions of the adrenal cortex. During the early years of World War II he prepared material for certain observations in Montreal. Another Canadian, Dr. C. N. H. Long, formerly of McGill University, worked with Sayers and White at Yale University, obtaining ACTH in purified form. At the same time, advances were made at the University of California by Li and Evans, who worked out an analysis of ACTH showing that it may be possible of synthesis. In 1947, Dr. J. B. Fishman, at Yale University, published his work on the preparation of ACTH, and on the basis of his studies the present extraction from pituitary glands is being undertaken. Dr. C. H. Best and his colleagues have made important contributions to the knowledge of ACTH, particularly in the relation of the pituitary gland to diabetes, and Dr. James Campbell, in the Department of Physiology, has had extensive experience in this field and in the development of assay methods. Dr. L. I. Pugsley, a co-worker of Dr. Collip in the early work and now a member of the Department of National Health and Welfare, is establishing work in this field in the Food and Drug laboratory.

The story of cortisone commences with work in 1925 by Drs. Rogoff and Stewart at Harvard University in which an extract of the adrenal cortex of animals prolonged the survival time of animals that had had their adrenal glands removed. Later, methods of extraction were developed and adrenal cortical extract now has an established place in the treatment of Addison's disease. In 1934 the Connaught Medical Research Laboratories, University of Toronto, pioneered in the production of this extract in Canada, making it available at a substantially lower price than would normally have obtained.

Many important contributions have been made in the study of the compounds isolated from the adrenal cortex. The complexity of the problem is appreciated when it is known that twenty-eight different compounds have been isolated. Cortisone is one of these compounds. One of the outstanding leaders in this field is Dr. E. C. Kendall, of the Mayo Clinic, who for many years has been engaged in intensive study of these steroid compounds. Among the compounds which he has been able to synthesize is cortisone. However, its production is extremely difficult, as it involves thirty-seven stages which can only be carried out by highly skilled organic chemists and requires several months of intensive work. At the present time, the essential building blocks required in the synthesis are obtained from ox-gall, but undoubtedly more adequate and cheaper sources will be found as investigations are conducted in laboratories throughout the world. It is obvious that very limited quantities of both ACTH and cortisone can be made available and that these must be used to obtain essential laboratory and clinical information.

The announcement of the possible value of these compounds in the treatment of human disease at once created pressing problems. Keenly aware of the significance of the reports, the Honourable Paul Martin, Minister of National Health and Welfare, personally obtained the essential information from Drs. Hench and Kendall of the Mayo Clinic and consulted with other leaders in the field. On December 2nd he presented to the House of Commons a statement which reviewed the findings and outlined the interest of the Government in assisting in every way intensive studies of these substances. The provision made by the Government is twofold: (1) through the National Research Council and the National Health Grants to forward research, and (2) through the National Health Grants to make available cortisone and ACTH for the purpose of research and clinical study in the leading medical centres of Canada. The Honourable Russell T. Kelley, Minister of Health and Hospitals for the Province of Ontario, immediately assisted the forwarding of the research program by endorsing the work as a public health research project and co-operating with the Dominion Government in making provision for its support through the National Health Grants. To forward the preparation of ACTH, a co-operative undertaking has been established in which the packing industry, the Federal Government, the Province of Ontario, and the University of Toronto will participate. The actual preparation of ACTH will be undertaken in the Connaught Medical Research Laboratories, where facilities for the handling of glandular products are already provided, and other departments in the University will participate in the study. The

laboratories have arranged with the packing industry from coast to coast to undertake the collection of pituitary glands from hogs, as the glands of hogs contain much larger quantities of this hormone than do the glands of other animals. The collection of the maximum quantity of glands is an urgent problem. One pound of pituitary glands is obtained from 1,700 hogs and each pound of glands provides only 50 vials, each of 25 mgm.—sufficient for the treatment of 25 patients for a week. The collection presents major difficulties to the packing industry, as the pituitary gland is very small and its removal requires the slicing of the head with special equipment. Each gland must be frozen immediately and kept frozen until processed. In Canada the collection has been rendered more difficult due to the different conditions of marketing, of brain tissue, and of the processing of heads. In spite of the problems presented, every packing company has undertaken to collect glands and to determine if it is possible for them to contribute to this national effort. The total quantity of glands can furnish only a relatively small amount of ACTH and it is realized that ACTH itself can never be a major factor in the treatment of arthritis. It is, however, a compound of very great promise and of intense interest to scientists, both in the laboratory and in the clinical field, and the findings may open the way to the successful treatment of several diseases. In the Connaught Medical Research Laboratories, intensive research work will be conducted in the development of suitable large-scale methods for the extraction of the extract. In the meantime, a portion of the glands will be forwarded to the Armour Laboratories, Chicago, where ACTH is now being successfully prepared, and the extract will be returned for use in Canada. It is hoped that within a year all the glands may be processed in the Connaught Medical Research Laboratories.

Of immediate practical concern is the obtaining and furnishing of such supplies of cortisone and ACTH as are available to the research and clinical groups best equipped to conduct extensive studies. The President of the National Research Council has named a representative committee who will advise in regard to the distribution of available supplies. These compounds will be very limited in quantity and are very expensive. The Honourable Mr. Martin's announcement included the provision of an adequate amount which will be made available from the National Health Grants to permit of the purchase of these compounds as soon as any supplies are available. The ACTH prepared in the University of Toronto will be supplied without charge to the committee. The Honourable Mr. Martin is to be warmly commended for his leadership and the Government for its prompt and generous action, which will make possible the implementing of investigations which are of concern to all Canadians.

ACTH and cortisone are at present subjects of high news value. It should be said that, in general, the statements made both by the press and by radio have combined optimism with restraint, and that the public, particularly those who are suffering from arthritis and rheumatism, understand that the work, though promising, is in the experimental stages. This is indeed fortunate, for it will undoubtedly take an extended period of study and trial before their value can be determined. By making the findings known, the Mayo Clinic and other

investigators have stimulated study in all parts of the world, and from unexpected quarters there may come contributions of great value which may simplify the problem and shorten the period required for the normal development of knowledge in this field. Canadians can feel satisfied that a comprehensive plan has been developed through the leadership of the Dominion Government, the Provincial Government of Ontario, the packing industry, and research and clinical groups in the medical centres from coast to coast.

THE ASSOCIATION'S NEW HONORARY SECRETARY AND HONORARY TREASURER

AT its meeting in Halifax last June, the Association's Executive Council learned with great regret that Dr. J. H. Baillie desired to be relieved of his duties as Executive Director in the fall. When Dr. Baillie was appointed in 1946, it was realized that his services would be available to the Association for only a short period, and his acceptance of the appointment was evidence of his desire to make a contribution to the Association in its endeavour to develop as the professional society of public health workers in Canada. The initial period of one year grew into three years, during which time important steps were taken, notably the formation of provincially organized health associations closely linked with the national association and the participation of the Provincial Departments of Health in the financial support of the Association through a plan of grants for services rendered. Under Dr. Baillie's direction, and with funds from the W. K. Kellogg Foundation, a committee of the Association has, during the past two years, conducted an extensive study of public health practices that are being carried out by public health personnel. With Miss Lyle Creelman, director of the study as it related to public health nursing, Dr. Baillie visited every province and carried out a survey study in at least one urban area and one rural health unit in each. The report of the findings will be published early in the new year. With Dr. Baillie's assistance, the Association has continued its discussions with the Royal College of Physicians and Surgeons on the certification of specialists in public health, and Dr. Baillie has served also as the Canadian representative on another certifying body, the American Board of Preventive Medicine and Public Health, Incorporated.

The Association is fortunate in that Dr. Baillie is maintaining his interest in the organization, having agreed to serve as honorary treasurer. Dr. William Mosley, Director of the East York—Leaside Health Unit and Associate Professor of Public Health Administration in the School of Hygiene, University of Toronto, has been appointed honorary secretary and will serve in a part-time capacity. In making this appointment, the Executive Committee appreciated that Dr. Mosley is well qualified to guide the Association, and has already given generously of his time in serving as honorary treasurer during the past four years. The Association wishes Dr. Baillie every success in his new appointment with The Bell Telephone Company of Canada and is pleased that he and Dr. Mosley will be available to carry forward the Association's work, with the able assistance of Mr. Robert L. Randall.

NEWS

Examinations of the American Board of Preventive Medicine and Public Health

THE AMERICAN BOARD of Preventive Medicine and Public Health, Inc., has announced the holding of examinations for certification, in conjunction with the meeting of the Western Branch of the American Public Health Association, which will be held at Portland, Oregon, May 28-June 2. Applications for these examinations will be received up till February 1 at the office of the secretary, Dr. Ernest L. Stebbins, 615 North Wolfe Street, Baltimore 5, Maryland.

Dr. Henry F. Vaughan Receives the Sedgwick Memorial Award

THE 1949 SEDGWICK Memorial Medal for distinguished service in public health was awarded to Dr. Henry F. Vaughan, Dean, School of Public Health, University of Michigan, at the seventy-seventh annual meeting of the American Public Health Association, held in New York last October. One of the best known figures in public health, Dr. Vaughan for twenty-three years (1918-1941) was Commissioner of Health of Detroit, Mich., where the health department, under his guidance, set a pattern which has influenced public health work throughout the United States and in many foreign countries.

Dr. Vaughan practised sanitary engineering and public health from 1913 to 1917. He was an associate professor of public health at Wayne University, Detroit, from 1915 to 1937, and full professor from 1937 to 1941. Since 1941 he has brought the School of Public Health, University of Michigan, to front rank among institutions of graduate public health study and training.

Dr. Vaughan was the chief organizer of the National Sanitation Foundation, which established a formula for cooperation between public health schools and industries concerned with products essential to the maintenance and development of public health.

Fellowships in Cancer Control

THE CANADIAN CANCER SOCIETY has announced the establishment of two medical fellowships in memory of the late Doctor Allan Blair of Regina. The fellowships are for study of the diagnosis and treatment of cancer. Each of the fellowships has a value of $4,000 a year for two years. The first becomes available July 1, 1950, the second July 1951, and in rotation thereafter.

In addition to a medical degree, applicants must have not less than three years of post-graduate study, of which at least two shall have been in a field related to the diagnosis of treatment of cancer.

Appointment of Miss Christine Livingston as Chief Superintendent of the V.O.N.

MISS CHRISTINE LIVINGSTON, Reg.N., assumed her work as chief superintendent of the Victorian Order of Nurses for Canada in January, 1949, upon the retirement of Miss Maude Hall.

Miss Livingston graduated from the Hamilton General Hospital School of Nursing in 1930 and, with a scholarship from her school, entered the School of Nursing at the University of Toronto and qualified in public health nursing. She has since obtained a B.S. degree from Teachers' College, Columbia University.

Following two years in the out-patient department at Hamilton General Hospital, Miss Livingston joined the staff of the Hamilton Health Department and remained there until 1938, when she went to Montreal as staff nurse with the Victorian Order of Nurses. After eighteen months in this position, she was appointed nurse-in-charge of the Moncton Branch, and six months later she was brought to the Victorian Order of Nurses national office as a supervisor. In 1943 she was named second assistant superintendent, and three years later she became district superintendent of the Montreal branch.

Dominion Executive of the Canadian Institute of Sanitary Inspectors

AT THE ANNUAL MEETING of the Canadian Institute of Sanitary Inspectors, held in Ottawa on October 17 and 18, the following officers were elected for the coming year: President, J. Albert Hotte, Montreal; Past-President, C. S. Huband, Ottawa; Secretary-Treasurer, François Brunelle, Montreal; Vice-

presidents, George Armson, Vancouver; Clifford Mallett, Edmonton; M. H. Kennedy, Moose Jaw; Mark Flattery, Winnipeg; J. M. Homer, Hamilton, and Paul Boucher, Montreal; Councillors, Paul Gaudet, Montreal, R. P. Hughes, Ottawa, and Jean Paquin, St. Eustache, Que.

British Columbia

DR. A. W. B. WESTON has been appointed as a health unit director on the staff of the Provincial Department of Health. She is a graduate of Glasgow University and received her Diploma in Public Health at the Royal College of Physicians and Surgeons in England. Dr. Weston will assume her duties at the newly formed health unit at Courtenay, Vancouver Island.

DR. A. J. NELSON has joined the staff of the Division of Venereal Disease Control as physician in charge of clinics. This position was formerly held by Dr. Charles L. Hunt, who is now director of the Division. Dr. Nelson is a graduate of Glasgow University and received his Diploma in Public Health at the Royal College of Physicians and Surgeons in England.

A SURVEY of hospital requirements in British Columbia was recently made public by the Hon. G. S. Pearson, Minister of Health and Welfare. This report estimates the provincial hospital needs for the next twenty-two years and makes definite recommendations on the provision of the facilities and personnel required to provide the needed hospital care. As a blue print of the hospital-care program for the entire province, the report is creating much interest and is receiving considerable study by hospital and medical authorities.

Alberta

THERE HAVE BEEN several staff changes in the Rosebud Health Unit. Miss Helen Byrt has resigned after two and a half years as junior nurse and has accepted a post with the North Okanagan Valley Health Unit in British Columbia. Miss Christine Nicol has also tendered her resignation and was married in October. Miss Margaret Davis has been appointed senior nurse with the Unit. She recently returned to Alberta after spending a year and a half with the Department of Public Health of the City of Toronto. Miss Laura Edwards has been appointed junior nurse. Miss Edwards recently completed her course in public health nursing.

Saskatchewan

MR. THOMAS J. BENTLEY, the newly elected member of the provincial Legislative Assembly for Gull Lake and a former member of the House of Commons for Swift Current, succeeds Premier T. C. Douglas as Minister of Public Health. The Hon. Mr. Bentley took over the duties of his new office on November 14.

HAROLD KENNEDY, M.B., D.P.H., a graduate of Queen's University, Belfast, Northern Ireland, assumed the duties of assistant to the chairman of the Health Services Planning Commission on October 8. Dr. Kennedy served as a major with the R.A.M.C. from 1941 to 1946. After leaving the army, he worked with U.N.R.R.A. until 1947 when he was appointed deputy director of health of the International Refugee Organization at Geneva, Switzerland.

A SERIES OF TEACHERS' INSTITUTES on mental hygiene was held on November 1, 2, and 3 at five centres in the Swift Current Health Region. During these Institutes, which were conducted by the Division of Health Education, Mental Services, the Health Region staff, and the Adult Education Division, new approaches to group work techniques were used.

MISS IRMA D. BALDWIN, a Household Science graduate of the University of Saskatchewan, was appointed travelling dietitian on September 15. She was formerly employed by the Winnipeg General Hospital where she took post-graduate work in hospital dietetics. Miss Baldwin will visit small hospitals which are now without the services of a trained dietitian in order to assist them with general food service, food purchasing, and therapeutic diets.

UNDER BURSARIES sponsored by the Health Services Planning Commission, six nurses from schools of nursing in Saskatchewan hospitals are now taking post-graduate work at several universities. The objective of the bursary program, one of several plans being undertaken to cope with the shortage of nurses in the province, is to improve the quality of student nurse instruction. Training grants to the six nurses total $7,224 and are in addition to federal government grants for similar professional training in other fields. Each nurse, who will study for about one year, is committed, under the terms of the grant, to return to Saskatchewan for a period of three years at least.

Manitoba

DR. C. R. DONOVAN, Acting Deputy Minister for the Department of Health and Public Welfare, represented the Department at the meeting of the Dominion Council of Health in Ottawa in October, and attended the annual meeting of the American Public Health Association in New York.

DR. J. M. O'KEEFE of Winnipeg has been appointed medical director of Stonewall Health Unit to replace temporarily Dr. V. S. Hawkes, who is studying for the Diploma in Public Health at the School of Hygiene, University of Toronto. Dr. O'Keefe graduated from the University of Manitoba in 1945 and for a year afterwards was garrison medical officer with the R.C.A.M.C. at Fort Osborne, Winnipeg. Following his discharge, he did postgraduate work in internal medicine in Newark, N.J., and since his return to Winnipeg has been assistant resident in surgery at Deer Lodge Hospital.

MISS NAN TUPPER CHAPMAN has been appointed dietitian consultant for the Manitoba Sanatorium Board. Miss Chapman's home is in Vernon, B.C., and she holds a degree of Master of Science from the University of Alabama. She worked for several years with the Department of National Health and Welfare and was also institutional dietitian with several hospitals in New York. For the past two years she has been on the household economics staff of the University of Saskatchewan.

DR. STEWART M. FRASER, a pioneer health official in Manitoba, died recently at the age of 89. Dr. Fraser was the first permanent health official in the province. In 1916 he was appointed epidemiologist and executive secretary of the Provincial Board of Health which administered public health until the Department of Health and Public Welfare was organized. During his first year in office Dr. Fraser organized Canada's first public health nursing group, engaging five nurses. He was active in health work until his retirement in 1931.

TWO NEW HOSPITAL DISTRICTS have been approved by ratepayers in the Neepawa and Gladstone areas of Manitoba. This brings to 21 the total number of hospital districts in Manitoba approved since the Health Services Act was passed in 1945. The Neepawa Hospital District plan calls for a new 34-bed hospital and one 6-bed nursing unit in the area while the Gladstone Hospital District will have a new 16-bed hospital and two four-bed nursing stations. These districts will serve about 17,000 people.

TENDERS HAVE BEEN CALLED by the Manitoba government for the construction of a 210-bed addition to the school for mentally defective persons at Portage la Prairie. This will bring the capacity up to 800 patients. The new wing will include training facilities and classrooms.

SIX SANITARY INSPECTORS trained under a federal grant have joined the Department of Health and Public Welfare and have been appointed to health units. They are: A. E. Lunde, who will stay in the central office in Winnipeg; A. Simcoe, Kildonan-St. Paul Unit; J. Sicotte, the Red River Unit; B. Stephen, the Brandon Unit; H. Christianson, the Selkirk Unit; and W. P. Fedak, the St. Boniface Unit. The last three inspectors are the second to be attached to their respective units.

MISS DAPHNE PRATT of the Newfoundland Department of Public Health spent a month in Manitoba studying health education methods and material.

Ontario

H. R. MACLAREN, D.D.S., D.D.P.H., of Ottawa, assistant chief of the Dental Health Division, Department of National Health and Welfare, was elected vice-chairman of the dental health section of the American Public Health Association at its seventy-seventh annual meeting in New York City in October. Dr. MacLaren is the only Canadian on the executive of the dental health section.

MISS FLORENCE GREENAWAY, Reg. N., B.N., has been appointed supervisor of public health nursing with the Division of Public Health Nursing, Ontario Department of Health. She assumed her duties on July 1st. Miss Greenaway graduated from the Toronto Western Hospital School of Nursing in 1931 and engaged in private and general duty nursing for several years. After completing the certificate course in public health nursing at the University of Toronto in 1936, she joined the Victorian Order of Nurses and served as staff nurse in Toronto, nurse-in-charge of the newly formed branches at Walkerton and Timmins, supervisor in Saint John, N.B., and assistant director in Windsor, Ontario. From 1946 to 1948, Miss Greenaway was supervisor of public health nursing in the Bruce County Health Unit. In 1949, after a period of study at McGill University, she re-

ceived the Bachelor of Nursing degree. Miss Greenaway is secretary of the Canadian Public Health Association's Public Health Nursing Section.

Quebec

DR. RICHARD DUBREUIL has been appointed medical officer of the Wolfe County Health Unit.

NINE nurses have been appointed to fill vacancies in various health units.

Maritimes

MENTAL HEALTH SERVICES are to be developed in New Brunswick through the training of special personnel now being assisted by federal health grants. At present, Dr. Arthur F. Chaisson, Fredericton, is taking a year's course in public health at the University of Toronto. After completing it, he will return to his post as clinician in the new provincial division of mental health. Messrs. Renald Daigle of Edmundston and Azor J. Cormier of Moncton are enrolled in a two-year course in psychology at the University of Montreal. In addition, Miss Lucie Melick of Saint John will take a year's course in mental health at the Forest Hill Village Training Project, Toronto.

Sixteen more nurses, 12 from Nova Scotia and four from Prince Edward Island, have recently been awarded aid from the federal health grants to enable them to take post-graduate training in public health. The Nova Scotia nurses are: Misses Katherine E. McVicar, Margaret Mackley, E. Louise Hattie, Elizabeth MacDougall, A. Elizabeth Duff, M. Frances Lyttle, Joan Wilson and Mary K. Floyd (all at the University of Toronto); Stella McNeary, Mary McIntosh and E. MacDougall (all at McGill University, Montreal); and M. P. Thomas (the University of Ottawa). Those from Prince Edward Island are: Misses Barbara Jane Smith, Noreen Noonan and Norma Shaw, at the University of Toronto; and Miss Barbara Smith, who is studying at Dalhousie University, Halifax.

Newfoundland

FIFTEEN PERSONS have recently been awarded financial assistance from the federal health grants to aid them in taking postgraduate courses in various phases of public health. Nine are nurses, five of whom will take training in public health. Three grants have been made to doctors: one to Dr. Desmond Blake for a year's course in public health at the University of Toronto; one to Dr. Ian Rusted for a three-year course in internal medicine at the Mayo Foundation; and one to Dr. Gordon Thomas for a year's training in thoracic surgery at the Muirdale Sanatorium, Milwaukee, Wisconsin.

The establishment of a new thoracic surgery unit at St. John's Sanatorium, a new pathology laboratory at the General Hospital, and purchase of occupational therapy equipment for the Hospital for Mental and Nervous Diseases are among projects just approved under the federal health program.

BOOKS

Streptomycin and Dihydrostreptomycin in Tuberculosis.

Edited by H. McLeod Riggins, M.D., and H. Corwin Hinshaw, M.D. New York: National Tuberculosis Association, 1949. 554 pp. $7.50.

THIS comprehensive volume reports the results of a study organized by the American Trudeau Society in 1946 at the request of six manufacturing chemical and pharmaceutical firms and the Civilian Production Committee of the U.S.A. which promised to donate the required streptomycin if the Society would organize, co-ordinate and plan the research.

Here is a history book to stir the minds of all true scientists and physicians to marvel at the wonders of our times, for it is present history.

In January, 1944, Dr. Waksman and co-workers first announced the isolation of streptomycin, and by November of the same year they published a paper regarding the effect of streptomycin upon *Mycobacterium tuberculosis*. This historic document is included in this volume, as are other early papers dealing with experimental work leading up to the eventual successful clinical trials of streptomycin, the first drug in the treatment of tuberculosis found to be of value in doses not dangerous to life.

The sections on the bacteriological problems in relation to chemotherapy of tuberculosis, and the pathology of the disease in relation to

chemotherapy are factual, stimulating of thought, and indicate that this new antibiotic from the first was not to be permitted to raise false hopes in the hearts of tuberculosis sufferers. The investigation of the drug proceeded in an orderly scientific fashion in an attempt to establish its true worth. The sections dealing with the treatment of clinical tuberculosis are less satisfying. It is granted that the results attained in the investigations were eminently satisfactory, but most reviews presented had to be preliminary estimates due to the small numbers of the cases observed and the shortness of the periods of observation.

The publication of the book, for this reason, might well have been delayed until 1951. At that time each investigator would have reached more definite conclusions regarding desirable dosage schedules, indications for streptomycin therapy, the significance of toxic symptoms, and the role played by drug resistance. By 1951, the historic worth of the original articles would have been just as impressive, and the scientific clinical knowledge imparted would have been greater.

It is to be regretted that the authors, just before going to press, did not add a chapter bringing the volume up to date in regard to our knowledge of streptomycin and dihydrostreptomycin, even though this might, of necessity, be tinged by slight personal prejudices.

Pertinent facts gleaned from the pages indicate that streptomycin is a valuable adjunct to accepted forms of bed rest and collapse therapies. Small doses of 1 gram daily or 20 mgm. per kilogram of body weight give almost as satisfactory results as larger doses and, at the same time, are less likely to cause the development of toxic symptoms. The drug administered once or twice daily is less toxic than when administered more frquently and brings about as good clinical and x-ray improvement of disease. The development of drug resistance bears a direct relationship to the duration of the treatment and probably also to the numbers of tubercle bacilli secreted by the lesions. The therapeutic effects upon different types and situations of tuberculous lesions are given in detail.

Dihydrostreptomycin, in the small number of cases presented, appears to be as efficacious as streptomycin in equal doses. The former is much less toxic than the latter, and may be substituted for streptomycin when toxic symptoms cause the latter to be abandoned. Organisms resistant to one drug are also resistant to the other.

Results of treatment of two cases with a combination of dihydrostreptomycin and para-amino-salicyclic acid (PAS) suggest that the latter may delay for a considerable period of time the development of dihydrostreptomycin-resistant tubercle bacilli and may also improve the therapeutic result over that obtained by dihydrostreptomycin alone.

Presumably due to the shortness of the periods of observation, nothing was mentioned regarding possible development of deafness as a late complication when dihydrostreptomycin is used.

This book is the report of a completed, well-integrated and comprehensive study. It should be in the library of every sanatorium or institution concerned with the diagnosis or treatment of tuberculosis. It is excellent as far as it goes, but it does not go far enough. It is to be hoped that the editors will publish a small, concise monograph to bring us up to date in 1951. The bibliographies are excellent.

J. F. Hiltz

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